REF2021

Institution: Loughborough University

Unit of Assessment: A2 Public Health, Health Services and Primary Care

Title of case study: Improving child nutrition and breastfeeding policies and programmes in Kenya

Period when the underpinning research was undertaken: 2014-2020

Details of staff conducting the underpinning research from the submitting unit:

Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Paula Griffiths	Professor of Population Health	2002-date
Emma Haycraft	Reader in Psychology	2007-date
Sophie Goudet	AXA postdoctoral research fellow	2013-2016

Period when the claimed impact occurred: 2014-2020

Is this case study continued from a case study submitted in 2014? N

1. Summary of the impact (indicative maximum 100 words)

The World Health Organization recommends that exclusive breast feeding should occur for 90% of infants to reduce infant mortality but rates often fall far short of this target. Loughborough University research identified poor infant feeding practices, especially in deprived urban areas, and developed community-based nutrition interventions to tackle this problem in collaboration with Kenyan scientists and stakeholders. Community-based trials of nutrition education programmes based on the Baby Friendly Community Initiative (BFCI) model 1) positively impacted exclusive breastfeeding rates, which increased from 42% to 82% in rural areas and from 2% to 50% in deprived urban areas, and 2) influenced Kenyan public health policy to adopt the adapted BFCI and meet UNICEF recommendations, with the programme now reaching 30/47 counties covering 4.75 million children under three years leading to improved infant and child nutrition.

2. Underpinning research (indicative maximum 500 words)

Loughborough University (lead Griffiths working with Haycraft and Goudet) has worked in equitable partnership with the African Population and Health Research Centre (lead Kimani-Murage), Kenyatta University (lead Kimiywe) and The Ministry of Health Kenya (lead Samburu - moved to UNICEF in 2020, and Wambu - since 2020) on data collection for the underpinning research since 2013 with findings published 2015-2020. The WHO recommends levels of 90% exclusive breastfeeding (EBF). Our work commenced when EBF in Kenya was at 32% (KDHS, 2008-2009) and 2% in poor urban areas (Kimani-Murage et al., 2011). Improving poor infant feeding is important because interventions which promote optimal breastfeeding and complementary feeding could prevent about a fifth of under five deaths in countries like Kenya.

Our research initially identified barriers to breastfeeding in poor Kenyan urban communities. We documented social and cultural beliefs and behaviours resulting in poor breastfeeding practices **[R2]** and identified key target areas for intervention to inform community based nutrition programmes including to; (i) improve maternal health and nutrition; (ii) promote optimal infant and young children feeding practices; (iii) support mothers in their working role; (iv) increase access to family planning; (v) improve water, sanitation and hygiene (WASH); (vi) address alcohol problems at all levels; and (vii) address street food issues with infant feeding counselling **[R3]**.

In Kenya, we subsequently tested a community-based community health worker led nutrition support intervention using both a randomized control trial (RCT) and quasi experimental study to improve rates of EBF in urban poor communities. We revealed increased rates of EBF in both control and intervention groups with slightly higher rates in the intervention group compared to the control **[R1].** Paying community health workers a small stipend in our study in both trial arms had motivated them to counsel women on EBF regardless of the study arm they were allocated to and had thus contaminated our findings. In a quasi-experimental study comparing our RCT intervention and control groups with a comparison group where workers were not paid in the area of study over the same period we noted that EBF rates had remained very similar in the comparison community (increased less than 2 percentage points) in contrast to those experienced in both the RCT control and intervention groups (increase of over 50 percentage points) compared to pre intervention **[R5]**. Furthermore, we showed evidence that the intervention bought a positive social return on investment as every $USD 1 (£0.82) invested was estimated to bring USD$ 71 (£58.40) (sensitivity analysis: USD$ 34-136 (£27.97-£111.87)) of social value for the stakeholders and users **[R4]**.

Working closely with the Kenyan government on these findings it was agreed, in line with their developing infant and child nutrition policies, to combine learning from this intervention into trialing an adapted version of the Baby Friendly Community Initiative in rural Koibatek County to provide the evidence needed for community-based nutrition programing in Kenya. This RCT recorded significant differences in EBF at 6 months in HIV negative mothers (42% control and 82% intervention) and HIV negative mothers in the intervention group were also more knowledgeable about the need for exclusive breastfeeding (42% control and 82% intervention) **[R6]**.

3. References to the research (indicative maximum of six references)

R1: Kimani-Murage, E.W., Griffiths, P.L., Wekesah, F. *et al* (2017). Effectiveness of home-based nutritional counselling and support on exclusive breastfeeding in urban poor settings in Nairobi: a cluster randomized controlled trial. *Global Health* **13,** 90. https://doi.org/10.1186/s12992-017-0314-9

R2: Wanjohi, M., Griffiths, P., Wekesah, F., Muriuki, P.et al, (2017). Sociocultural factors influencing breastfeeding practices in two slums in Nairobi, Kenya. *International Breastfeeding Journal*, **12**, 5. http://doi.org/10.1186/s13006-016-0092-7

R3: Goudet, S. M., Kimani, E. K., Wekesah, F., Griffiths, P. L. et al. (2017). How does poverty affect children's nutritional status in Nairobi slums? A qualitative study of the root causes of undernutrition. *Public Health Nutrition*, 20, 4, 608-619. DOI: http://dx.doi.org/10.1017/S1368980016002445

R4: Goudet, S., Griffiths, P.L., Wainaina, C.W., Macharia, T.N. et al. (2018). Social value of a nutritional counselling and support program for breastfeeding in urban poor settings, Nairobi. *BMC Public Health* **18,** 424. https://doi.org/10.1186/s12889-018-5334-8

R5: Kimani-Murage, E. W., Norris, S. A., Mutua, M. K., Wekesah, F. et al Griffiths, P. L., (2016). Potential effectiveness of the community health strategy to promote exclusive breastfeeding in urban poor settings in Nairobi, Kenya: a quasi-experimental study. *Journal of Developmental Origins of Health and Disease*, **7**,2, 172-184. DOI: https://doi.org/10.1017/S2040174415007941

R6: Samburu, B.M., Young, S.L., Wekesah, F.M., Njeri, M., Kimiywe, J., Griffiths, P. L. *et al.* (2020). Effectiveness of the baby-friendly community initiative in promoting exclusive breastfeeding among HIV negative and positive mothers: a randomized controlled trial in Koibatek Sub-County, Baringo, Kenya. *International Breastfeeding Journal*, **15,** 62. DOI: https://doi.org/10.1186/s13006-020-00299-4

The papers were published following peer review. The body of research was funded by competitively-awarded grants, also awarded following rigorous peer review: 1. MRC, UK (circa £200k). UK-Africa network to improve the nutrition of infants and young children living in poverty (NINO LIP) in urbanising sub-Saharan African countries (Griffiths, PI, Haycraft CI

2018-2109); 2. British Academy, UK (circa £350k). *Testing the Feasibility of Incorporating Support for Early Childhood Development into the Baby Friendly Community Initiative in Kenya* (Griffiths, PI and Haycraft CI 2017-2019); 3. International Food Policy Research Institute through Transform Nutrition (circa £100k). *Social Return on Investment – Home Based Nutritional Counselling Intervention in Urban Poor Settings, Nairobi, Kenya*. (Griffiths and Goudet CIs 2015); 4. Wellcome Trust community engagement award (circa £30k). Establishing innovative community engagement approaches in baby friendly community initiatives. (Griffiths CI 2013-2014); 5. NIH/USAID, USA (Circa £350k). *Feasibility and effectiveness of the baby friendly community initiative in Kenya: A pilot community trial in a rural setting*. (Griffiths CI 2013-2017); and 6. Wellcome Trust, UK (Circa £520k). *Effectiveness of home based personalized home-based nutritional counselling on infant feeding practices in urban informal settlements, Nairobi, Kenya* (Griffiths sponsor to Liz Kimani Murage on this training fellowship, 2012-2015).

4. Details of the impact (indicative maximum 750 words)

To address the negative health outcomes for babies and young children of low exclusive breast-feeding rates, our research underpinned a series of measures that improved support for appropriate infant/young child feeding in several ways in Kenya and beyond. Our **impact pathway** involved working with strategically important stakeholders in Kenya for the delivery of the Baby Friendly Community Initiative to co-evolve our research ideas together, to refine our research design and to share findings. We have developed relationships with national (MOH) and local government (relevant county health departments) in Kenya as well as a range of stakeholders (United Nations Children's Fund (UNICEF), PATH (Global Health organisation), World Health Organisation (WHO), Feed the children, Save the Children, and Concern Worldwide (NGO tackling hunger and poverty) who provided resources to assist the Kenyan government to implement the BFCI. The MOH has facilitated our working relationship with these organisations, some of whom (UNICEF [S7] and PATH) have been project partners in our funded research.

We also evolved relationships with other stakeholders with an interest in the BFCI because of their organisation's priorities for work and we regularly include these in our project inception and dissemination meetings (e.g., Kidogo - East African organisation supporting quality childcare; Scaling up Nutrition Business network, and The Agha Khan Foundation East Africa – an NGO supporting development). We undertook community engagement activities with parents, grandparents, community leaders and community health workers to share findings in the counties of Baringo, Nairobi, Kericho, and Kajiado using storytelling, dancing, and visual participatory methods. We have also shared findings outside of Kenya with countries who have also expressed an interest in the BFCI model, meeting with the Ministries of Health in Malawi and Peru and contributing our research findings to an expert parenting interventions consultation meeting organised by UNICEF/The Lego Foundation [S6], **leading to the following impacts**:

1. Increased exclusive breastfeeding rates in rural and urban Kenya

Our research on the BFCI intervention [R6] led to increased exclusive breastfeeding rates (e.g., forty percentage points in rural Koibatek) [S7]. These increases have been achieved through improving the knowledge of mothers and their support networks about the benefits of exclusive breastfeeding and how to overcome some of the practical challenges of breastfeeding. We have learned through engagement with Kenyan end users/programme implementers that there have been positive changes in infant feeding practices/nutrition in communities as well as improved confidence of community health volunteers resulting from the BFCI:

> *"Many people used to leave their children dirty and didn't bother how they were feeding the baby but now we are told to wash our hands and to prepare food hygienically. If the baby doesn't finish the food, I keep leftovers well. Some people*

> *just come from the toilet and pick (up) the baby and start breastfeeding without even washing their hands, and that causes diarrhea in the baby, but they (CHVs) came and taught us. Since the program came children don't have diarrhea a lot." (FGD, Mothers, Nairobi Slums)* [S5]

> *"The changes I have observed on the part of the mother, she knows these things about breastfeeding the baby and maintaining hygiene more than in the past. Therefore, the family has stabilized." (FGD, Fathers, Nairobi Slums)* [S5]

> *"When you advise them and they listen to you it motivates you so much and you know, as I was trained, with my training I am giving back to the community and they listen and follow up, you feel happy." (FGD, CHVs, Nairobi slums)* [S5]

2. Influenced Kenyan public health policy to adopt the adapted Baby Friendly Community Initiative programme and meet UNICEF recommendations

Our research informed Kenyan National public health guidelines for implementation of the BFCI Initiative [S1, S2] based on our experiences of implementing Kenyan community-based infant nutrition interventions. Working with Dr Kimani-Murage [S3] and Professor Kimiywe [S4], Kenyan technical experts, enabled us to collaborate with the Ministry of Health and shape policy decisions [S1, S2].

With exclusive breastfeeding rates remaining relatively low in Kenya and the first nine out of ten steps of UNICEF's Baby Friendly Hospital Initiative being implemented in Kenya, the challenge was to understand how to implement the 10th step of the BFHI in the African context of Kenya. The MOH needed evidence on how to implement the tenth step and decided to use the Baby Friendly Community Initiative (BFCI) as a model to do this with evidence from our research contributing to this decision. The tenth step extends support for breastfeeding beyond the hospital and into the community through "*the establishment of breastfeeding support groups and refers mothers to them on discharge from the hospital or clinic*" (UNICEF 2005). This is important because many mothers do not deliver in the hospital in Kenya and for those that do this extends further support after discharge from hospital to help mothers to maintain exclusive breastfeeding beyond the first few days of an infant's life.

Our trial results and information on the potential social return on investment into community-based nutrition education interventions including the BFCI provided evidence towards scaling the BFCI into 30 of Kenya's 47 counties covering 4.75 million children under three years. Ms Betty Samburu, Assistant Director, Nutrition and Dietetics Services, MOH, Kenya commented in July 2019 to say

> "*Thanks Paula for continuously and consistently working with the MOH Kenya. The impact that evidence from research has brought forth is great and will save lives of many Kenyans*." [S3]

Our team took a holistic view of impact realising that learning from unintended impact is as important as understanding the positive impacts of our work. In consultation with 161 end users and stakeholders in Nairobi county during 2015 we identified unintended impacts of our work on the health system including the BFCI resulting in an increased demand for primary healthcare which strained the existing health system [S5]. We further revealed that the BFCI placed financial strain on community health volunteers to help vulnerable families. We acted on this knowledge by sharing it through a meeting and short report with the Kenyan MOH and Nairobi county health department in March 2016 [S5], enabling them to better plan for the need for additional staff into primary health care when introducing the BFCI in other Kenyan counties.

5. Sources to corroborate the impact (indicative maximum of 10 references)

S1 Letter of support about collaborative research, influence on guidelines and increased breastfeeding rates in Kenya from the Ministry of Health in Kenya

S2 The BFCI implementation guidelines document - https://www.mcsprogram.org/wp-content/uploads/2018/04/BFCI-Implementation-Guidelines.pdf

S3 Letter of support about collaboration and influence that we have had on the Kenyan BFCI guidelines from Dr Elizabeth Kimani-Murage APHRC, 09/11/20

S4 Letter of support about collaborative research and influence that we have had on the Kenyan BFCI guidelines from Professor Judith Kimiywe, Kenyatta University, 28/09/20

S5 Kimani-Murage, E., Goudet, S., Samburu, B., Wangui, C., Njoki, T., Njeri, M, Wekesah, F. M., Muriuki, P., Nganga, R., Adero, D., and Griffiths, P (2016). Short report from the Social Return on Investment: Assessment of a Baby Friendly Community Intervention in Urban Poor Settings, Nairobi, Kenya, March 2016. https://aphrc.org/wp-content/uploads/2019/07/FINAL-FILE-Design-draft-4-Social-return-on-investments-evaluation-report-31st-Mar-2016.pdf (date of last access Dec 09th 2020)

S6 UNICEF/ Lego Foundation (2019). **Toward the Next Generation of Early Childhood Development Parenting Interventions: Knowns, Unknowns, and What Should be Known.** Compilation of Three Technical Consultation Reports Billund April 4, 2019; Phone Consultation June 12, 2019; New York City July 17-18, 2019.

S7 Letter of support about collaborative research, influence on guidelines and increased breastfeeding rates in Kenya from UNICEF, Kenya, 18/11/20